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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Paper No. 21

Application Number: 09/433,332
Filing Date: November 03, 1999
Appellant(s): DONOHUE, JOHN E.

Jon M. Powers
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 11/3/2003.

(1) ***Real Party in Interest***

A statement identifying the real party in interest is contained in the brief.

(2) ***Related Appeals and Interferences***

A statement identifying the related appeals and interferences which will directly affect or be directly affected by or have a bearing on the decision in the pending appeal is contained in the brief.

(3) ***Status of Claims***

The statement of the status of the claims contained in the brief is correct.

(4) ***Status of Amendments After Final***

The appellant's statement of the status of amendments after final rejection contained in the brief is incorrect.

The amendment after final rejection filed on 11/3/2003 has been entered.

(5) ***Summary of Invention***

The summary of invention contained in the brief is correct.

(6) ***Issues***

The appellant's statement of the issues in the brief is correct.

(7) ***Grouping of Claims***

The appellant's statement in the brief that certain claims do not stand or fall together is not agreed with because Applicant does not provide a statements containing reasons, as set forth in 37 CFR 1.192(c)(7) and (c)(8), to support the assertion that claims 1-29 each stand or fall on their own merits.

(8) Claims Appealed

The copy of the appealed claims contained in the Appendix to the brief is correct.

(9) Prior Art of Record

6,282,683	Dapper et al	8-2001
4,816,825	Chan et al	3-1989
4,754,451	Eng et al	6-1988
4,701,909	Kavehrad et al	10-1987
4,959,829	Griesing, John	9-1990
5,768,682	Peyrovian, M. Javad	6-1998
5,469,495	Beveridge, Gregory J.	11-1995
5,838,989	Hutchison	11-1998
4,531,239	Usui, Takeshi	7-1985

(10) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1-4, 6, 9, 18, 20, 22, and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dapper (USPN 6,282,683) in view of Chan et al (USPN 4,816,825) in further view of Eng et al (USPN 4,754,451).

3. Regarding claims 1 and 18, Dapper discloses a hybrid fiber/coax network (col. 4, lines 58-59), comprising: a head end (col. 4, line 59-col. 5, line 10); at least one optical distribution node coupled to the head end over at least one fiber optic link (col. 14, lines 22-25 and col. 120, lines 60-63); at least one coaxial cable link, coupled to the at least one optical distribution node, that receives upstream, digital data (col. 1, lines 25-32 and col. 125, lines 9-10) from a plurality of modems (col. 1, lines 25-32 and col. 125, lines 52-55); and wherein the at least one optical distribution node has a digital return path that includes: a laser transmitter coupled to the fiber optic link that transmits the upstream, digital data to the head end (col. 27, lines 35-36); a data concentrator (combiner) coupled to provide the upstream, digital data to the laser (col. 27, lines 29-38 and Fig. 5, reference 408); and for the at least one coaxial cable link, a frequency translator (frequency shifter) that receives and translates the upstream, digital data from the plurality of modems to a different carrier frequency (col. 27, lines 15-25 and Fig. 5, reference 64). Dapper possibly does not disclose having a frequency translator that receives and translates the upstream, digital data from the plurality of modems to a different carrier frequency and retransmits the signal to the plurality of modems for collision detection. Chan teaches, in a coax cable network, having a frequency translator that receives and translates the upstream, digital data from a plurality of modems to a different carrier frequency and retransmits the signal to the plurality of modems for collision detection (col. 2, line 65-col. 3, line 17). Chan does this as a way to detect if collisions have occurred during the transmission by having the transmitting modem check for errors by comparing the original with the turn-around signal (col. 3, lines 13-17). It would have been obvious to one of ordinary skill in the art to have a frequency translator that receives and translates the upstream, digital data from the plurality of modems to a different

carrier frequency and retransmits the signal to the plurality of modems for collision detection in order to ensure that the information is properly transmitted. Dapper in view of Chan possibly does not expressly disclose having a data interface coupled between the frequency translator and the data concentrator that determines whether a collision occurred with the upstream, digital data so as to prevent corrupted upstream, digital data from being passed on to the head end; however, as stated above, Dapper in view of Chan does disclose checking the data for corruption due to collisions. Eng discloses, in a packet communication system, having filters (data interface) coupled to a data concentrator which ensure that the data entering the concentrator is valid (col. 7 lines 3-11). It is obvious that the filters are coupled directly to the data concentrator in order to ensure that invalid data cannot enter into the stream after the filters have checked it. Since a collision is a well known type of data corruption and since Eng is used to prevent corrupted data from entering the multiplexer, it would have been obvious to one of ordinary skill in the art to have a data interface coupled directly to the concentrator, which would place it between the frequency translator and the data concentrator, that determines whether a collision occurred with the upstream, digital data so as to prevent corrupted upstream, digital data from being passed on to the head end.

4. Regarding claim 2, referring to claim 1, Dapper in view of Chan in further view of Eng discloses that a portion of the upstream, digital data is transmitted over the at least one coaxial cable link on modulated carriers below 42 MHz (Dapper: col. 124, lines 51-59).

5. Regarding claim 3, referring to claim 1, Dapper in view of Chan in further view of Eng discloses that for downstream data "any number of modulation techniques may be used for transmission...the modulation techniques utilized and performed by RF modem...may include

quadrature phase shift keying (QPSK), quadrature amplitude modulation (QAM), or other modulation techniques for providing the desired data rate" (Dapper: col. 121, lines 27-34). Although this disclosure is for downstream data, it would be obvious that the same modulation techniques used for downstream transmission could be the same modulation techniques used for upstream transmission. Other modulation techniques include on-off keying which is well-known in the art. It would have been obvious to one of ordinary skill in the art of hybrid fiber/coax networks that the modulated carriers are modulated with the upstream, digital data using one of on-off keying, quadrature phase-shift keying and quadrature amplitude modulation.

6. Regarding claim 4, referring to claim 1, Dapper in view of Chan in further view of Eng discloses that the upstream, digital data is carried on one of at least two modulated carriers (Dapper: col. 124, lines 51-64 and col. 125, line 57-col. 126, line 1). Because there are multiple signals being sent in the frequency band, it would be obvious to modulate the upstream data on multiple carriers.

7. Regarding claims 6 and 20, referring to claims 1 and 18, Dapper in view of Chan in further view of Eng discloses that the upstream, digital data comprises Ethernet packets (Dapper: col. 95, lines 48-63). It is obvious that if Ethernet connections are used that the data is Ethernet packets.

8. Regarding claim 9, referring to claim 1, Dapper in view of Chan in further view of Eng discloses a receiver circuit coupled to the fiber optic link and the at least one coaxial cable link that receives downstream optical signals and converts the signals to electrical signals for transmission over the at least one coaxial cable link (Dapper: col. 122, line 39-64 esp. 59-64).

9. Regarding claim 22, referring to claim 18, Dapper in view of Chan in further view of Eng discloses that the ODN receives upstream, digital data on at least one additional carrier (col. 124, lines 51-67 and col. 125, line 57-col. 126, line 1).

10. Regarding claim 23, referring to claim 18, Dapper in view of Chan in further view of Eng discloses that the frequency translator receives the upstream, digital data modulated on a first carrier with a frequency that is below the frequency range for downstream transmissions (Dapper: col. 124, lines 51-59), where downstream transmission frequencies are 54-725 MHz (Dapper: col. 120, lines 39-40 and col. 121, lines 20-26).

11. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dapper (USPN 6,282,683) in view of Chan et al (USPN 4,816,825) in further view of Eng et al (USPN 4,754,451) as applied to claim 1 above, and further in view of Kavehrad et al (USPN 4,701,909) in further view of Griesing (USPN 4,959,829).

12. Regarding claim 5, referring to claim 1, Dapper in view of Chan in further view of Eng discloses a system that has a plurality of modems that transmit signals (retransmitted data) when a collision is detected based on signals from the frequency translator (Chan: col. 2, line 65-col. 3, line 17). Dapper in view of Chan in further view of Eng does not disclose that the modems transmit collision detection signals when a collision is detected. Kavehrad discloses transmitting a collision detection signal when a collision is detected in order to inform the system that a collision has occurred (col. 4, lines 16-29). By informing the transmitters in a system of a collision, the transmitters can use random backoff to ensure that one collision does not compound into more and more collisions. It would have been obvious to one of ordinary skill to transmit a collision detection signal in order to allow other transmitters to take proper steps to

ensure that the collision does not lead to more collisions. Dapper in view of Chan in further view of Eng in further view of Kavehrad possibly does not disclose that the collision detection signal is transmitted on a different modulated carrier. Griesing teaches transmitting a collision detection signal that is distinct from a receive or transmit signal. This is done in order to prevent the interpretation of one signal from interfering with another (col. 3, lines 10-13). It is obvious that one way to separate the transmit or receive signal from the collision detection signal is to modulate the collision signal on a different carrier than the transmitted signals. It would have been obvious to one skilled in the art of hybrid fiber/coax networks to modulate the collision detection signal on a different modulated carrier in order to prevent the collision detection signal from being confused with another signal.

13. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dapper (USPN 6,282,683) in view of Chan et al (USPN 4,816,825) in further view of Eng et al (USPN 4,754,451) as applied to claim 1 above, and further in view of Peyrovian (USPN 5,768,682).

14. Regarding claim 7, referring to claim 1, Dapper in view of Chan in further view of Eng does not disclose having at least a portion of the upstream, digital data transmitted over the plurality of coaxial cable links on modulated carriers above a cut-off frequency for downstream transmission. Peyrovian teaches having a portion of the upstream data transmitted on modulated carriers above a cut-off frequency for downstream transmission (col. 3 lines 25-42 esp. lines 36-43). Peyrovian does this because high frequency bands are less susceptible to noise than low frequency bands (col. 3 lines 44-53). It would have been obvious to one of ordinary skill in the art of hybrid fiber/coax networks to modulate a portion of the upstream data on carriers above a

cut-off frequency for downstream transmission in order to make the upstream, digital data less susceptible to noise.

15. Claim 8 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dapper (USPN 6,282,683) in view of Chan et al (USPN 4,816,825) in further view of Eng et al (USPN 4,754,451) as applied to claim 1 and 18 above, and further in view of Beveridge (USPN 5,469,495).

16. Regarding claims 8 and 21, referring to claims 1 and 18, Dapper in view of Chan in further view of Eng discloses that the laser transmitter transmits the upstream, digital data as a modulated carrier transmission (Dapper: col. 125 line 57-col. 126 line 1). Dapper in view of Chan in further view of Eng does not disclose that the laser transmitter transmits the upstream, digital data as a base-band transmission. Beveridge teaches transmitting an upstream, optical signal as a base-band transmission (col. 2 lines 10-20). Beveridge does this because a base-band signal "may be carried directly on a transmission line" (col. 1 lines 55-56). It is implicit that carrying the base-band signal directly over a transmission line does not require extra mechanisms to modulate and demodulate the signal. Thus the added difficulties of modulation and demodulation are removed making it easier to transmit the signal. It would have been obvious to one of ordinary skill in the art to allow for base-band signals to travel over the optical link because sending base-band signals requires less mechanisms and so is simpler than sending band-pass signals.

17. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dapper (USPN 6,282,683) in view of Chan et al (USPN 4,816,825) in further view of Eng et al (USPN 4,754,451) as applied to claim 18 above, and further in view of Hutchison (USPN 5,838,989).

18. Regarding claim 19, referring to claim 18, Dapper in view of Chan in further view of Eng does not specifically disclose that at least one media access unit coupled to the at least one coaxial cable link and the data concentrator are located in the at least one optical distribution node. Hutchison teaches the use of media access (attachment) units (MAU) to allow connection of a device (here the ODN) to a specific medium. By attaching an MAU between the device and the medium, the MAU allows data to travel onto the specific medium (Fig. 1, Fig. 3, and col. 1 lines 29-41 and col. 1 line 60- col. 2 line 14). Although Hutchison does not describe attaching an MAU to the at least one coaxial cable link and the data concentrator, it would have been obvious to do so. By placing a MAU on the data concentrator and the coax link, the optical distribution node would be enabled to communicate over the coax cable medium. It would have been obvious to one of ordinary skill in the art to place media access units on the interfaces to a medium in order to allow a device to communicate over that medium.

19. Claims 10-12, 14, and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dapper (USPN 6,282,683) in view of Chan et al (USPN 4,816,825).

20. Regarding claim 10, Dapper discloses a hybrid fiber coax network (col. 4, lines 58-59) comprising: a head end (col. 4, line 59-col. 5, line 10); at least one optical distribution node coupled to the head end over at least one fiber optic link (col. 14, lines 22-25 and col. 120, lines 60-63) to provide upstream, digital data to the head end (col. 1, lines 25-32, col. 27, lines 35-36, and col. 126, lines 4-6); at least one coaxial cable link, coupled to the at least one optical distribution node, that receives upstream, digital data (col. 1, lines 25-32 and col. 125, lines 9-10) from a plurality of modems (col. 1, lines 25-32 and col. 125, lines 52-55); and wherein at least a portion of the upstream, digital data is transmitted over the at least one coaxial cable link on at

least one modulated carrier below a frequency range for downstream transmission (col. 124, lines 51-59), where downstream transmission frequencies are 54-725 MHz (col. 120, lines 39-40 and col. 121, lines 20-26). Dapper possibly does not disclose that the at least one optical distribution node includes circuitry for retransmitting upstream, digital data back over the at least one coaxial cable link to detect collisions on the at least one coaxial cable link. Chan teaches, in a coax cable network, having a frequency translator that receives and translates the upstream, digital data from the plurality of modems to a different carrier frequency and retransmits the signal to the plurality of modems for collision detection (col. 2, line 65-col. 3, line 17). Chan does this as a way to detect if collisions have occurred during the transmission by having the transmitting modem check for errors by comparing the original with the turn-around signal (col. 3, lines 13-17). It would have been obvious to one of ordinary skill in the art to have the at least one optical distribution node include circuitry (frequency translator) for retransmitting upstream, digital data back over the at least one coaxial cable link to detect collisions on the at least one coaxial cable link in order to ensure that the information is properly transmitted.

21. Regarding claim 11, referring to claim 10, Dapper in view of Chan discloses that for downstream data "any number of modulation techniques may be used for transmission…the modulation techniques utilized and performed by RF modem…may include quadrature phase shift keying (QPSK), quadrature amplitude modulation (QAM), or other modulation techniques for providing the desired data rate" (Dapper: col. 121, lines 27-34). Although this disclosure is for downstream data, it would be obvious that the same modulation techniques used for downstream transmission could be the same modulation techniques used for upstream transmission. Other modulation techniques include on-off keying which is well-known in the art.

It would have been obvious to one of ordinary skill in the art of hybrid fiber/coax networks that the modulated carriers are modulated with the upstream, digital data using one of on-off keying, quadrature phase-shift keying and quadrature amplitude modulation.

22. Regarding claim 12, referring to claim 10, Dapper in view of Chan discloses that the upstream, digital data is carried on one of at least two modulated carriers (Dapper: col. 124, lines 51-64 and col. 125, line 57-col. 126, line 1). Because there are multiple signals being sent in the frequency band, it would be obvious to modulate the upstream data on multiple carriers.

23. Regarding claim 14, referring to claim 10, Dapper in view of Chan discloses that the upstream, digital data comprises Ethernet packets (Dapper: col. 95, lines 48-63). It is obvious that if Ethernet connections are used that the data is Ethernet packets.

24. Regarding claim 17, referring to claim 10, Dapper in view of Chan discloses a receiver circuit coupled to the fiber optic link and the at least one coaxial cable link that receives downstream optical signals and converts the signals to electrical signals for transmission over the at least one coaxial cable link (Dapper: col. 122, lines 39-64, esp. 59-64).

25. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dapper (USPN 6,282,683) in view of Chan et al (USPN 4,816,825) as applied to claim 10 above, and further in view of Kavehrad et al (USPN 4,701,909) in further view of Griesing (USPN 4,959,829).

26. Regarding claim 13, referring to claim 10, Dapper in view of Chan discloses a system that has a plurality of modems that transmit signals (retransmitted data) when a collision is detected based on signals from the frequency translator (Chan: col. 2, line 65-col. 3, line 17). Dapper in view of Chan in further view of Eng does not disclose that the modems transmit collision detection signals when a collision is detected. Kavehrad discloses transmitting a

collision detection signal when a collision is detected in order to inform the system that a collision has occurred (col. 4, lines 16-29). By informing the transmitters in a system of a collision, the transmitters can use random backoff to ensure that one collision does not compound into more and more collisions. It would have been obvious to one of ordinary skill to transmit a collision detection signal in order to allow other transmitters to take proper steps to ensure that the collision does not lead to more collisions. Dapper in view of Chan in further view of Kavehrad possibly does not disclose that the collision detection signal is transmitted on a different modulated carrier. Griesing teaches transmitting a collision detection signal that is distinct from a receive or transmit signal. This is done in order to prevent the interpretation of one signal from interfering with another (col. 3, lines 10-13). It is obvious that one way to separate the transmit or receive signal from the collision detection signal is to modulate the collision signal on a different carrier than the transmitted signals. It would have been obvious to one skilled in the art of hybrid fiber/coax networks to modulate the collision detection signal on a different modulated carrier in order to prevent the collision detection signal from being confused with another signal.

27. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dapper (USPN 6,282,683) in view of Chan et al (USPN 4,816,825) as applied to claim 10 above, and further in view of Peyrovian (USPN 5,768,682)

28. Regarding claim 15, referring to claim 10, Dapper in view of Chan does not disclose having at least a portion of the upstream, digital data transmitted over the plurality of coaxial cable links on modulated carriers above a cut-off frequency for downstream transmission. Peyrovian teaches having a portion of the upstream data transmitted on modulated carriers above

a cut-off frequency for downstream transmission (col. 3, lines 25-42, esp. lines 36-43). Peyrovian does this because high frequency bands are less susceptible to noise than low frequency bands (col. 3, lines 44-53). It would have been obvious to one of ordinary skill in the art of hybrid fiber/coax networks to modulate a portion of the upstream data on carriers above a cut-off frequency for downstream transmission in order to make the upstream, digital data less susceptible to noise.

29. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dapper (USPN 6,282,683) in view of Chan et al (USPN 4,816,825) as applied to claim 10 above, and further in view of Beveridge (USPN 5,469,495).

30. Regarding claim 16, referring to claim 10, Dapper in view of Chan discloses that the optical distribution node transmits the upstream, digital data as a modulated carrier transmission (Dapper: col. 125, line 57-col. 126 line 1). Dapper in view of Chan does not disclose that the ODN transmits the upstream, digital data as a base-band transmission. Beveridge teaches transmitting an upstream, optical signal as a base-band transmission (col. 2, lines 10-20). Beveridge does this because a base-band signal "may be carried directly on a transmission line" (col. 1, lines 55-56). It is implicit that carrying the base-band signal directly over a transmission line does not require extra mechanisms to modulate and demodulate the signal. Thus the added difficulties of modulation and demodulation are removed making it easier to transmit the signal. It would have been obvious to one of ordinary skill in the art to allow for base-band signals to travel over the optical link because sending base-band signals requires less mechanisms and so is simpler than sending band-pass signals.

31. Claims 24, 25, and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dapper (USPN 6,282,683) in view of Chan et al (USPN 4,816,825) in further view of Usui (USPN 4,534,239).

32. Regarding claim 24, Dapper discloses a method for processing data in a return path of a hybrid fiber/coax network comprising: receiving, on a first coaxial cable, upstream, digital data modulated on a first carrier (col. 1, lines 25-32 and col. 124, lines 59-63); translating (shifting) the frequency of the first carrier to a second frequency (col. 125, line 57-col. 126, line 1); retransmitting the upstream, digital data modulated on the carrier with the second frequency (col. 125, line 57-col. 126, line 1); concentrating (combining) the upstream, digital data with upstream, digital data from other coaxial cables (col. 27, lines 29-38); and transmitting the concentrated, upstream, digital data to the head end (col. 27, line 35-36). Dapper possibly does not disclose having collision detection. Chan teaches having a frequency translator that receives and translates the upstream, digital data from the plurality of modems to a different carrier frequency and retransmits the signal to the plurality of modems for collision detection (col. 2, line 65-col. 3, line 17). Chan does this as a way to detect if collisions have occurred during the transmission by having the transmitting modem check for errors by comparing the original with the turn-around signal (col. 3, lines 13-17). It would have been obvious to one of ordinary skill in the art to have collision detection in order to ensure that the information is properly transmitted. Dapper in view of Chan possibly does not disclose checking for collision detection signals. Usui discloses having a receiver check for a collision detection signal in order to determine if the received packet has been corrupted (col. 4, lines 58-64). It would have been obvious to one of

ordinary skill to check for a collision detection signal in order to determine if a received packet was corrupted by a collision.

33. Regarding claim 25, referring to claim 24, Dapper in view of Chan in further view of Usui discloses receiving digital data on a first carrier below a frequency range for downstream transmission (col. 124 lines 51-59), where downstream frequencies are 54-725 Mhz (Dapper: col. 120, lines 39-40 and col. 121, lines 20-26).

34. Regarding claim 29, referring to claim 24, Dapper in view of Chan in further view of Usui discloses that the upstream, digital data comprises Ethernet packets on a modulated carrier (Dapper: col. 95, lines 48-63). It is obvious that if Ethernet connections are used that the data is Ethernet packets.

35. Claim 26 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dapper (USPN 6,282,683) in view of Chan et al (USPN 4,816,825) in further view of Usui (USPN 4,534,239) as applied to claim 24 above, and further in view of Peyrovian (USPN 5,768,682).

36. Regarding claim 26, referring to claim 24, Dapper in view of Chan in further view of Usui does not disclose having at least a portion of the upstream, digital data transmitted over the plurality of coaxial cable links on modulated carriers above a cut-off frequency for downstream transmission. Peyrovian teaches having a portion of the upstream data transmitted on modulated carriers above a cut-off frequency for downstream transmission (col. 3, lines 25-42, esp. lines 36-43). Peyrovian does this because high frequency bands are less susceptible to noise than low frequency bands (col. 3, lines 44-53). It would have been obvious to one of ordinary skill in the art of hybrid fiber/coax networks to modulate a portion of the upstream data on carriers above a

cut-off frequency for downstream transmission in order to make the upstream, digital data less susceptible to noise.

37. Claim 27 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dapper (USPN 6,282,683) in view of Chan et al (USPN 4,816,825) in further view of Usui (USPN 4,534,239) as applied to claim 24 above, and further in view of Griesing (USPN 4,959,829).

38. Regarding claim 27, referring to claim 24, Dapper in view of Chan in further view of Usui possibly does not disclose that checking for collision detection signals comprises monitoring a third frequency for collision detection signals. Griesing teaches transmitting a collision detection signal that is distinct from a receive or transmit signal. This is done in order to prevent the interpretation of one signal from interfering with another (col. 3, lines 10-13). It is obvious that one way to separate the transmit or receive signal from the collision detection signal is to modulate the collision signal on a different carrier than the transmitted signals. It would have been obvious to one skilled in the art of hybrid fiber/coax networks to modulate the collision detection signal on a different modulated carrier in order to prevent the collision detection signal from being confused with another signal. It also would have been obvious to one of ordinary skill in the art to monitor this different carrier in order to determine if a collision had or had not occurred.

39. Claim 28 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dapper (USPN 6,282,683) in view of Chan et al (USPN 4,816,825) in further view of Usui (USPN 4,534,239) as applied to claim 24 above, and further in view of Beveridge (USPN 5,469,495).

40. Regarding claim 28, referring to claim 24, Dapper in view of Chan in further view of Usui discloses transmitting the upstream, digital data as a modulated carrier transmission

(Dapper: col. 125, line 57-col. 126, line 1). Dapper in view of Chan in further view of Usui does not disclose transmitting the upstream, digital data as a base-band transmission. Beveridge teaches transmitting an upstream, optical signal as a base-band transmission (col. 2, lines 10-20). Beveridge does this because a base-band signal "may be carried directly on a transmission line" (col. 1, lines 55-56). It is implicit that carrying the base-band signal directly over a transmission line does not require extra mechanisms to modulate and demodulate the signal. Thus the added difficulties of modulation and demodulation are removed making it easier to transmit the signal. It would have been obvious to one of ordinary skill in the art to allow for base-band signals to travel over the optical link because sending base-band signals requires less mechanisms and so is simpler than sending band-pass signals.

(11) Response to Argument

With respect to claim 1, Applicant argues that that "None of the references, alone or in combination, teach or suggest the network of claim 1." Examiner, respectfully, submits that the combination of references teach all of the limitations of claim 1 as is set forth in paragraph 3 of the above rejection.

Applicant further argues that the combination of Dapper and Chan is not proper. Specifically, Applicant contends that the combination of Dapper and Chan is improper because Chan is concerned with a "closed" system while Dapper and claim 1 are directed to an "open" system. "Although Chan does appear to use frequency turn-around to retransmit data to modems for collision detection, Chan does this in an environment different from a hybrid fiber/coax (HFC) network and thus would necessarily involve a different set of problems than an HFC network" (Appeal Brief, page 11).

In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In the present case, Dapper and Chan suggest the combination since the proposed combination results in an increase in the reliability of the cable system in Dapper. In addition, both Dapper and Chan are analogous art since both Dapper and Chan contain a cable system and since the modifications of Dapper suggested by Chan concern only the cable system in Dapper.

Dapper discloses, in an HFC system, receiving a signal at an ODN from a transmitting modem on a cable system, converting the electrical signal to an optical signal at the ODN, and transmitting the optical signal by the ODN to a head end over a fiber system (see paragraph 3 in the above rejection). Dapper also discloses that the system includes a mechanism for detecting errors in transmissions due to collisions; however, the specifics of the mechanism are not taught, although examples of collision detection mechanisms are provided (col. 63, line 7-27).

Chan teaches, in a cable system, receiving a signal at a head-end from a transmitting modem and retransmitting the signal back to the modems in the down-stream frequency band in order to allow the transmitting modem to perform collision detection, where Dapper's ODN is equivalent to Chan's head-end since each is the central control device for the cable system. Chan's system increases the reliability of the cable system by ensuring that data has not been corrupted during transmission. In the art of communications, increasing reliability is one of the

strongest rationales to modify a system because the integrity of the data is essential to the proper operation of a system.

Thus one of ordinary skill in the art would recognize that Chan's teachings concerning a specific type of collision detection mechanism could be used to provide the collision detection mechanism in Dapper, where collision detection mechanisms increase reliability in the cable system of Dapper. As such, the combination of Dapper and Chan suggests, receiving a signal at an ODN from a transmitting modem, retransmitting the signal back to the modems by the ODN in order to allow the transmitting modem to perform collision detection, converting the electrical signal to an optical signal at the ODN, and transmitting by the ODN the optical signal to a fiber head if a collision has not occurred. Such a combination allows the open system of Dapper to properly function while having increased reliability on the cable portion of the open system.

Therefore, Examiner submits that the combination of Dapper and Chan is proper since Dapper and Chan suggest such a combination with evidentiary support being supplied in the above arguments and in paragraph 3 of the above rejection. For the reasons given above, claim 1 and dependent claims 2-4, 6, and 9, which include the limitations of claim 1, are obvious in view of the prior art.

Applicant argues that claim 18, and by extension, claims 20, 22, and 23, are allowable since "claim 18 contains similar elements to claim 1" (page 12 of the Appeal Brief). However, Examiner rebuts the arguments Applicant supplies for claim 1. Therefore, for the reasons provided above with respect to claim 1, claims 18, 20, 22, and 23 are obvious in view of the prior art.

With regards to claim 5, Applicant argues "that none of the references alone or in combination teach or suggest the network of claim 5 for the reasons provided above with respect to claim 1" (page 13 of the Appeal Brief). For the reasons provided above, by Examiner, with respect to claim 1, claim 5 is obvious in view of the prior art. Applicant further argues that "there is no teaching or suggestion in the references that justifies the modification of Dapper, Chan and Eng with two other references to incorporate the claimed collision detection signal" since "Examiner provides no evidentiary support for" the motivations to combine. Examiner, respectfully, disagrees. In paragraph 12 of the above rejection, motivation is provided as well as citations in the references to support such a combination. Since evidentiary support is provided for the motivations, the rejection is proper and claim 5 is obvious in view of the prior art.

With regards to claim 7, Applicant argues "that none of the references alone or in combination teach or suggest the network of claim 5 for the reasons provided above with respect to claim 1" (page 14 of the Appeal Brief). For the reasons provided above, by Examiner, with respect to claim 1, claim 7 is obvious in view of the prior art. Applicant further argues that "there is no teaching or suggestion in the references that justifies the modification of Dapper with these three other references to achieve the claimed invention" since "Examiner provides no evidentiary basis" for the motivations to combine. Examiner, respectfully, disagrees. The combination of Dapper with Chan and Eng has been previously addressed in the above arguments. In paragraph 14 of the above rejection, motivation is provided as well as citations in the references to support such a combination of Dapper, Chan, and Eng with Peyrovian. Since evidentiary support is provided for the motivations, the rejection is proper and claim 5 is obvious in view of the prior art.

With regards to claims 8 and 21, Applicant "incorporates the arguments applied to claim 1 above to traverse this rejection of claim 8" and claim 21 (pages 14 and 15 of the Appeal Brief). For the reasons provided above, by Examiner, with respect to claim 1, claims 8 and 21 are obvious in view of the prior art. Applicant further argues that there "is no teaching or suggestion in the references that justifies the modification of Dapper with these three other references to achieve the claimed invention" since "Examiner provides no evidentiary basis for" the motivations to combine. Examiner, respectfully, disagrees. The combination of Dapper with Chan and Eng has been previously addressed in the above arguments. In paragraph 16 of the above rejection, motivation is provided as well as citations in the references to support such a combination of Dapper, Chan, and Eng with Beveridge. Since evidentiary support is provided for the motivations, the rejection is proper and claims 8 and 21 are obvious in view of the prior art.

With regards to claim 19, Applicant "incorporates the arguments applied to claim 18 above to traverse this rejection of claim 19" (page 15 of the Appeal Brief). For the reasons provided above, by Examiner, with respect to claim 18, claim 19 is obvious in view of the prior art. Applicant further argues that there "is no teaching or suggestion in the references that justifies the modification of Dapper with these three other references to achieve the claimed invention" since "Examiner fails to provides an evidentiary basis for" the motivations to combine. Examiner, respectfully, disagrees. The combination of Dapper with Chan and Eng has been previously addressed in the above arguments. In paragraph 18 of the above rejection, motivation is provided as well as citations in the references to support such a combination of Dapper, Chan, and Eng with Hutchison. Since evidentiary support is provided for the motivations, the rejection is proper and claim 19 is obvious in view of the prior art.

Applicant argues that claim 10, and by extension, claims 11, 12, 14, and 17 are allowable since "As discussed above with respect to claim 1, there is no teaching, suggestion or motivation to combine Dapper and Chan" (page 16 of the Appeal Brief). However, Examiner rebuts the arguments Applicant supplies for claim 1. Therefore, for the reasons provided above with respect to claim 1, claims 10-12, 14, and 17 are obvious in view of the prior art.

With regards to claim 13, Applicant "incorporates the arguments applied to claim 10 above to traverse this rejection of claim 13" (page 17 of the Appeal Brief). For the reasons provided above, by Examiner, with respect to claim 10, claim 13 is obvious in view of the prior art. Applicant further argues that "there is no teaching or suggestion in the references that justifies the modification of Dapper with three other references to achieve the claimed invention" since "Examiner provides no evidentiary basis for" the motivations to combine. Examiner, respectfully, disagrees. In paragraph 26 of the above rejection, motivation is provided as well as citations in the references to support such a combination. Since evidentiary support is provided for the motivations, the rejection is proper and claim 13 is obvious in view of the prior art.

With regards to claim 15, Applicant "incorporates the arguments applied to claim 10 above to traverse this rejection of claims 15" (sic) (page 18 of the Appeal Brief). For the reasons provided above, by Examiner, with respect to claim 10, claim 15 is obvious in view of the prior art. Applicant further argues that "there is no teaching or suggestion in the references that justifies the modification of Dapper with two other references to achieve the claimed invention" since "Examiner fails to provide evidentiary basis" for the motivations to combine. Examiner, respectfully, disagrees. The combination of Dapper with Chan has been previously addressed in the above arguments. In paragraph 28 of the above rejection, motivation is provided as well as

citations in the references to support such a combination of Dapper and Chan with Peyrovian. Since evidentiary support is provided for the motivations, the rejection is proper and claim 15 is obvious in view of the prior art.

With regards to claim 16, Applicant "incorporates the arguments applied to claim 10 above to traverse this rejection of claim 16" (page 18 of the Appeal Brief). For the reasons provided above, by Examiner, with respect to claim 10, claim 16 is obvious in view of the prior art. Applicant further argues that there "is no teaching or suggestion in the references that justifies the modification of Dapper with these two other references to achieve the claimed invention" since "Examiner provides no evidentiary basis for" the motivations to combine. Examiner, respectfully, disagrees. The combination of Dapper with Chan has been previously addressed in the above arguments. In paragraph 30 of the above rejection, motivation is provided as well as citations in the references to support such a combination of Dapper and Chan with Beveridge. Since evidentiary support is provided for the motivations, the rejection is proper and claim 16 is obvious in view of the prior art.

With regards to claim 24, and by extension, claims 25 and 29, Applicant "traverses the appropriateness of the combination of Dapper with Chan for the reasons identified above" (page 19 of the Appeal Brief). For the reasons provided above, by Examiner, with respect to claim 1, claims 24, 25, and 29 are obvious in view of the prior art, with respect to the combination of Dapper and Chan. Applicant further argues that there "Examiner provides no evidentiary basis for combining Dapper and Chan with Usui". In paragraphs 32-34 of the above rejection, motivation is provided as well as citations in the references to support such a combination of

Dapper and Chan with Usui. Since evidentiary support is provided for the motivations, the rejection is proper and claims 24, 25, and 29 are obvious in view of the prior art.

With regards to claim 26, Applicant "incorporates the arguments applied to claim 24 above to traverse this rejection of claim 26" (page 20 of the Appeal Brief). For the reasons provided above, by Examiner, with respect to claim 24, claim 26 is obvious in view of the prior art. Applicant further argues that "there is no teaching or suggestion in the references that justifies the modification of Dapper with these two other references to achieve the claimed invention" since "Examiner provides no evidentiary basis" for the motivations to combine. Examiner, respectfully, disagrees. The combination of Dapper with Chan has been previously addressed in the above arguments. In paragraph 36 of the above rejection, motivation is provided as well as citations in the references to support such a combination of Dapper, Chan, and Usui with Peyrovian. Since evidentiary support is provided for the motivations, the rejection is proper and claim 15 is obvious in view of the prior art.

With regards to claim 27, Applicant "incorporates the arguments applied to claim 24 above to traverse this rejection of claim 27" (page 20 of the Appeal Brief). For the reasons provided above, by Examiner, with respect to claim 24, claim 27 is obvious in view of the prior art. Applicant further argues that "there is no teaching or suggestion in the references that justifies the modification of Dapper with these three other references to achieve the claimed invention" since "Examiner provides no evidentiary basis for" the motivations to combine. Examiner, respectfully, disagrees. In paragraph 38 of the above rejection, motivation is provided as well as citations in the references to support such a combination. Since evidentiary support is

provided for the motivations, the rejection is proper and claim 27 is obvious in view of the prior art.

With regards to claim 28, Applicant "incorporates the arguments applied to claim 24 above to traverse this rejection of claim 28" (page 21 of the Appeal Brief). For the reasons provided above, by Examiner, with respect to claim 24, claim 28 is obvious in view of the prior art. Applicant further argues that there "is no teaching or suggestion in the references that justifies the modification of Dapper with these two other references to achieve the claimed invention" since "Examiner provides no evidentiary basis for" the motivations to combine. Examiner, respectfully, disagrees. The combination of Dapper with Chan and Usui has been previously addressed in the above arguments. In paragraph 40 of the above rejection, motivation is provided as well as citations in the references to support such a combination of Dapper, Chan, and Usui with Beveridge. Since evidentiary support is provided for the motivations, the rejection is proper and claim 28 is obvious in view of the prior art.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

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